

AD-A117 138

ARMY ELECTRONICS RESEARCH AND DEVELOPMENT COMMAND WS--ETC F/G 4/2  
19319A MLRS, MISSILE NUMBERS BN-118, BN-137, BN-116, ROUND NUMB--ETC(U)  
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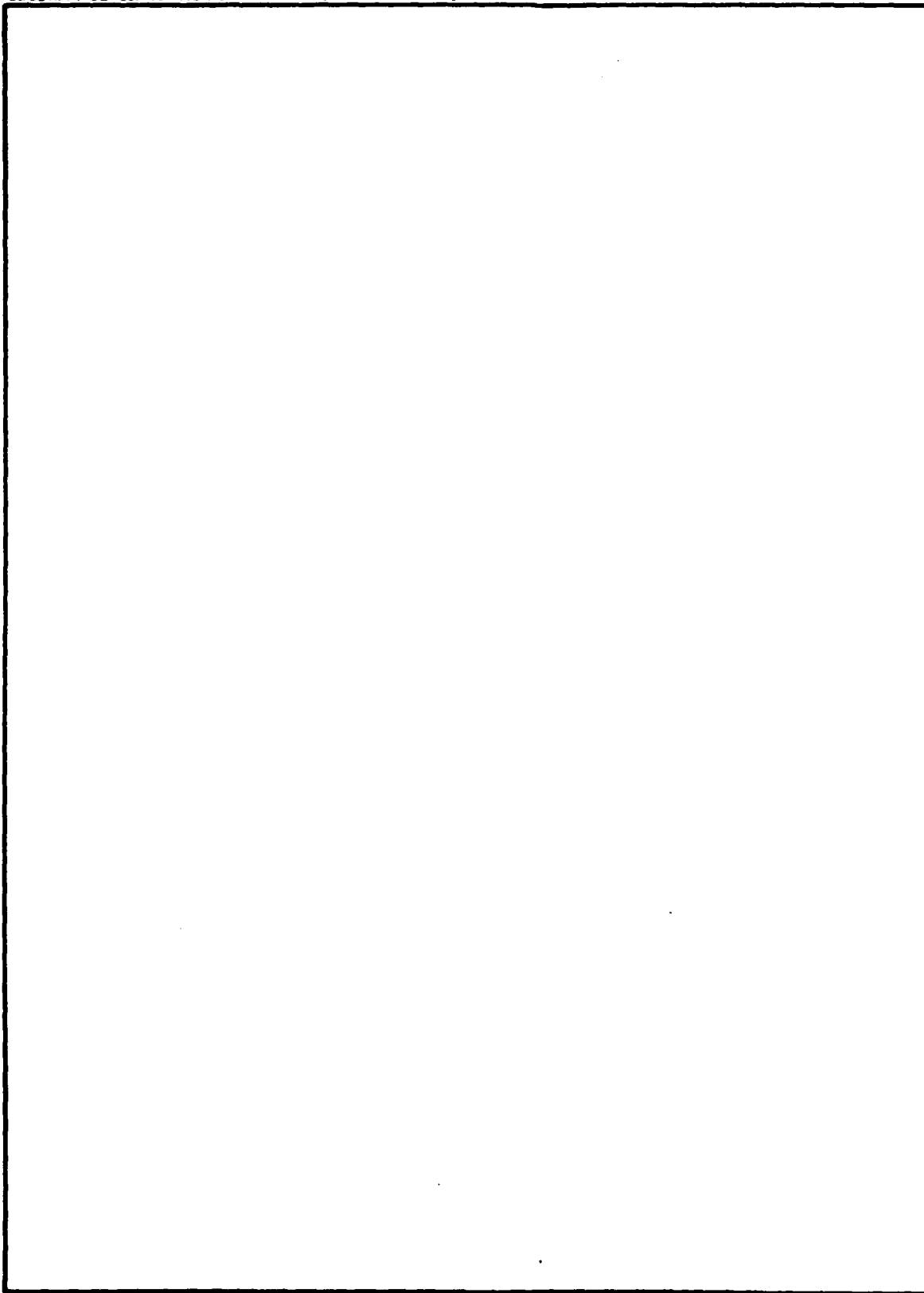
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| 4. TITLE (and Subtitle)<br>19319A MLRS<br>Missile Number BN-118, BN-137, BN-116<br>Round Number V-261/PQ-1, V-262/PQ-2, V-263/PQ-3  |                                      | 5. TYPE OF REPORT & PERIOD COVERED                             |
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| 20. ABSTRACT (Continue on reverse side if necessary and identify by block number)<br>Meteorological data gathered for the launching of the 19319A MLRS,<br>Missile Number BN-118, BN-137, BN-116, Round Number V-261/PQ-1,<br>V-262/PQ-2, V-263/PQ-3 are presented in tabular form. |                                      |  |

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## INTRODUCTION

19319A MLRS, Missile Numbers BN-118, BN-137, and BN-116, Round Numbers V-261/PQ-1, V-262/PQ-2, and V-263/PQ-3, were launched from LC-33, White Sands Missile Range (WSMR), New Mexico, at 1416:17, 1416:27, and 1416:34 MDT, 27 May 1982. The scheduled launch times were 1400, 1400:04.5, and 1400:09 MDT.

## DISCUSSION

Meteorological data were recorded and reduced by the White Sands Meteorological Team, Atmospheric Sciences Laboratory (ASL), White Sands Missile Range, New Mexico. The data were obtained by the following methods:

### 1. Observations

#### a. Surface

(1) Standard surface observations to include pressure, temperature ( $^{\circ}\text{C}$ ), relative humidity, dew point ( $^{\circ}\text{C}$ ), density ( $\text{gm/m}^3$ ), wind direction and speed, and cloud cover were made at the LC-33 Met Site at T-0 minutes.

(2) Anemometer data were provided from existing pole-mounted and tower-mounted anemometers at LC-33. Monitor of wind speed and direction from one anemometer was also provided in the launch control room.

#### b. Upper Air

(1) Low level wind data were obtained from pilot-balloon observations at:

## SITE AND ALTITUDE

WSD 2 km  
DON 2 km

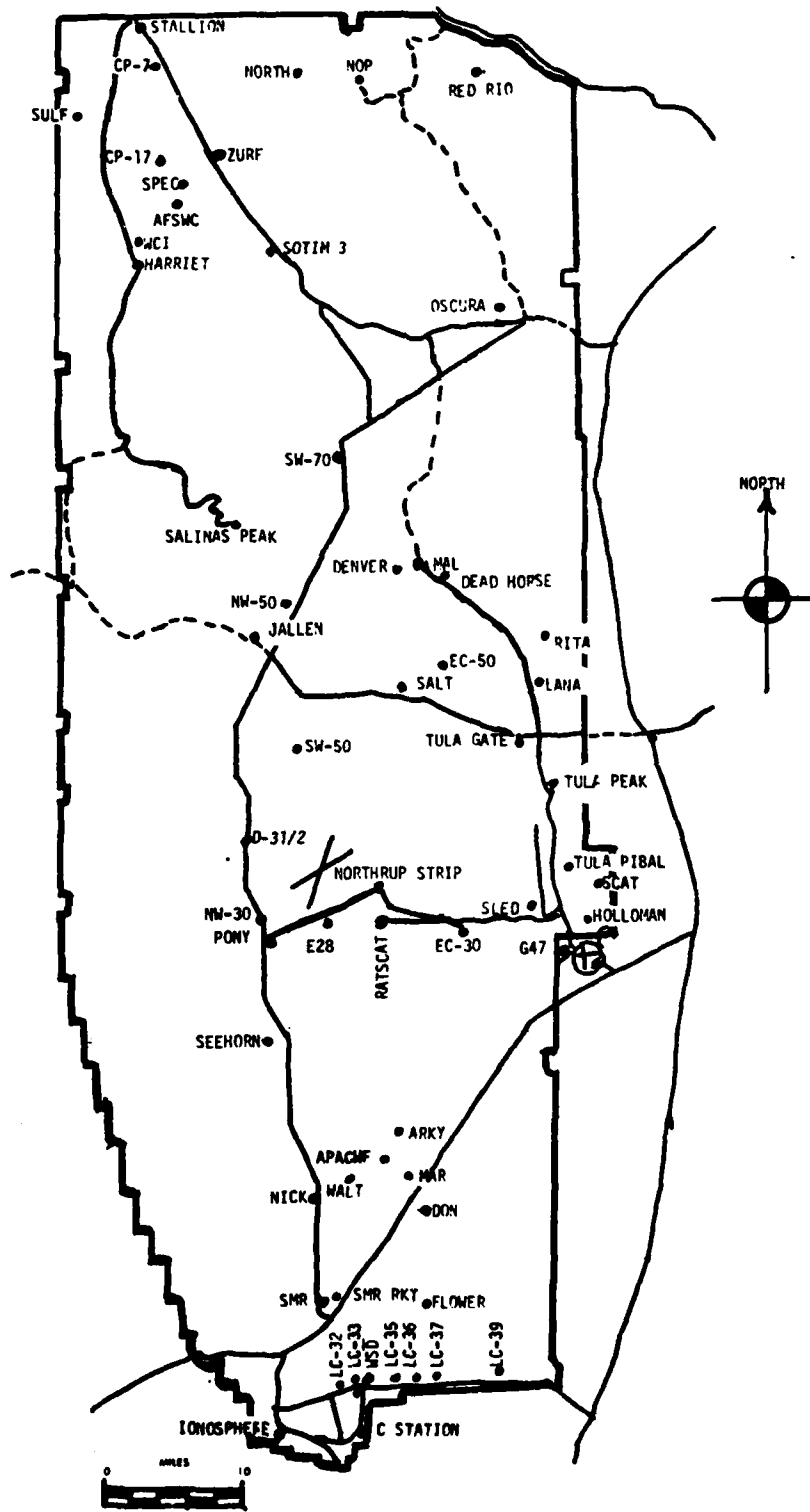
(2) Air structure data (rawinsonde) were collected at the following Met Sites:

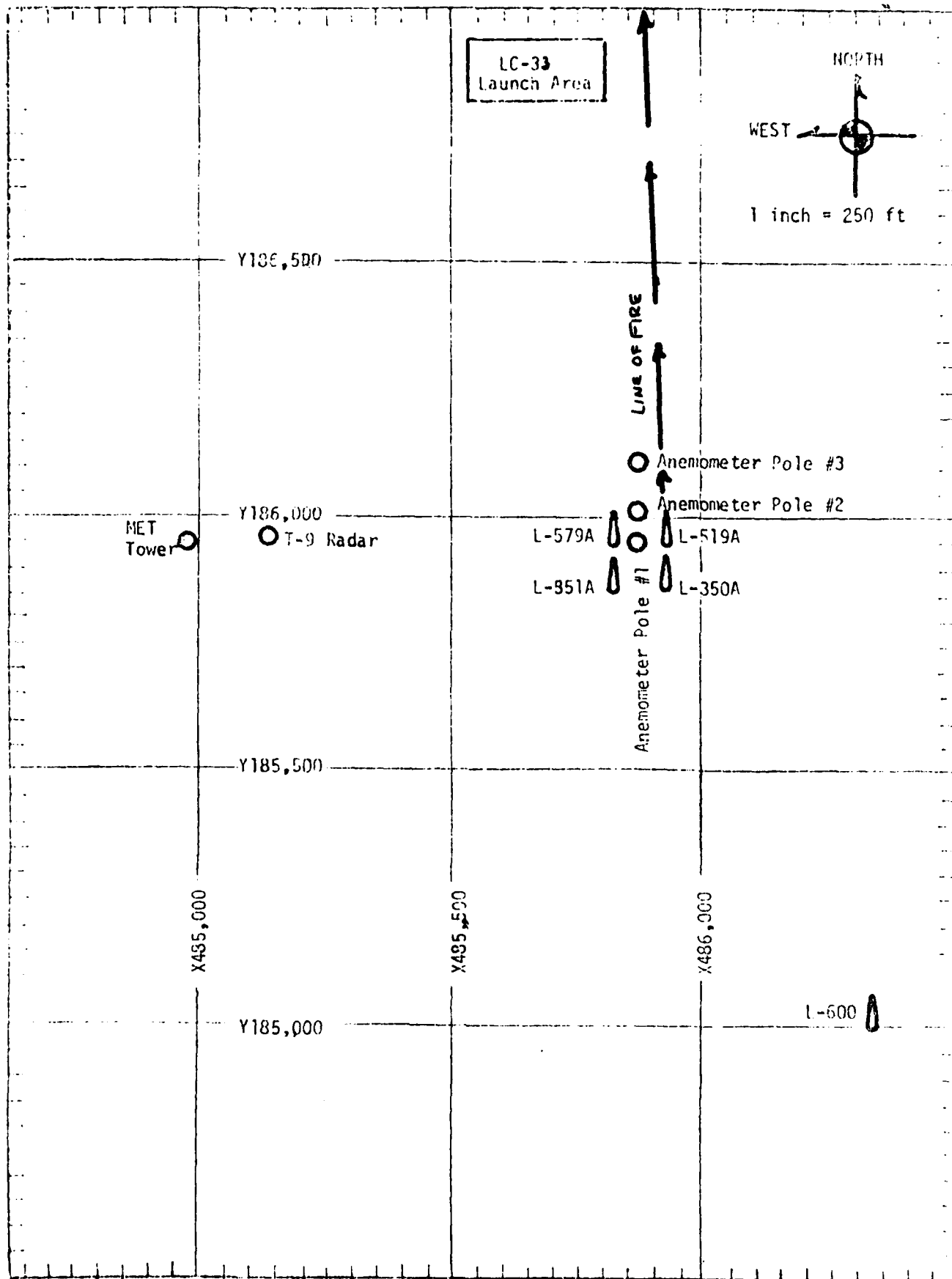
## SITE AND TIME

WSD 1100 MDT  
LC-37 1200 MDT  
WSD 1300 MDT  
LC-37 1400 MDT



# WSMR METEOROLOGICAL SITES





# PROJECT SURFACE OBSERVATION

| STATION LC-33 E and A |      |                 |                      |                    |                           |                               |                      |              |                  |                        |  |
|-----------------------|------|-----------------|----------------------|--------------------|---------------------------|-------------------------------|----------------------|--------------|------------------|------------------------|--|
| TABLE 1               |      | DATE 27         |                      | May                |                           | 82                            |                      | X=484,982.64 |                  | Y=185,957.73 H=3983.00 |  |
| DAY                   |      | MONTH           |                      | YEAR               |                           |                               |                      |              |                  |                        |  |
| TIME                  | MD J | PRESSURE<br>mbs | TEMPERATURE<br>OF °C | DEW POINT<br>OF °C | RELATIVE<br>HUMIDITY<br>% | DENSITY<br>gm/ml <sup>3</sup> | DIRECTION<br>degs In | SPEED<br>kts | CHARACTER<br>kts | VISIBIL-<br>ITY        |  |
| 1418                  |      | 871.9           | 26.0                 | 7.2                | 30                        | 1011                          | 005                  | 08           |                  | 50                     |  |
|                       |      |                 |                      |                    |                           |                               |                      |              |                  |                        |  |
|                       |      |                 |                      |                    |                           |                               |                      |              |                  |                        |  |

| OBSTRUCTIONS<br>TO VISIBILITY | CLOUDS    |      |           |      |           |      | REMARKS |        |                |
|-------------------------------|-----------|------|-----------|------|-----------|------|---------|--------|----------------|
|                               | 1st LAYER |      | 2nd LAYER |      | 3rd LAYER |      |         |        |                |
|                               | AMT       | TYPE | AMT       | TYPE | AMT       | TYPE |         |        |                |
| 8                             | CB        | 6000 | 1         | AS   | 10,000    | 1    | CL      | 25,000 | OCNL LTG CG SW |
|                               |           |      |           |      |           |      |         |        | VSBY LESS SW   |
|                               |           |      |           |      |           |      |         |        |                |

## PSYCHROMETRIC COMPUTATION

|                 |      |  |
|-----------------|------|--|
| TIME:           | 1418 |  |
| DRY BULB TEMP.  | 26.0 |  |
| WET BULB TEMP.  | 14.6 |  |
| WET BULB DEPR.  | 11.4 |  |
| DEW POINT       | 7.2  |  |
| RELATIVE HUMID. | 30   |  |

TABLE 2 LC-33 FIXED POLE ANEMOMETER MEASURED WINDS

| POLE #1<br>X485,874.29<br>Y185,958.90<br>H4018.74<br>38.7 ft. AGL |            |                | POLE #2<br>X485,874.29<br>Y186.012.00<br>H4033.57<br>53.0 ft. AGL |            |                | POLE #3<br>X485,877.29<br>Y186,116.06<br>H4063.92<br>83.6 ft. AGL |            |                |
|---|------------|----------------|---|------------|----------------|---|------------|----------------|
| T-TIME<br>SEC   | DIR<br>DEG | SPEED<br>KNOTS | T-TIME<br>SEC   | DIR<br>DEG | SPEED<br>KNOTS | T-TIME<br>SEC   | DIR<br>DEG | SPEED<br>KNOTS |
| -30   | 035        | 09             | -30   | 040        | 06             | -30   | 037        | 10             |
| -20   | 027        | 07             | -20   | 048        | 07             | -20   | 038        | 10             |
| -10   | 041        | 08             | -10   | 045        | 08             | -10   | 043        | 10             |
| 0.0   | 035        | 06             | 0.0   | 045        | 07             | 0.0   | 041        | 10             |
| +10   | 040        | 07             | +10   | 055        | 07             | +10   | 036        | 10             |

TABLE 3 LC-33 METEOROLOGICAL TOWER ANEMOMETER MEASURED WINDS (202 FT TOWER)

| LEVEL #1, 12 FEET<br>X484,982.64, Y185,057.73, H3983.00 (base) |         |             | LEVEL #2, 62 FEET<br>X484,982.64, Y185,057.73, H3983.00 (base) |         |             |
|--|---------|-------------|--|---------|-------------|
| T-TIME SEC   | DIR DEG | SPEED KNOTS | T-TIME SEC   | DIR DEG | SPEED KNOTS |
| -30  | 005     | 09          | -30  | 002     | 11          |
| -20  | 351     | 09          | -20  | 004     | 12          |
| -10  | 348     | 09          | -10  | 002     | 11          |
| 0.0  | 004     | 08          | 0.0  | 016     | 10          |
| +10  | 360     | 09          | +10  | 003     | 06          |

| LEVEL #3, 102 FEET<br>X484,982.64, Y185,057.73, H3983.00 (base) |         |             | LEVEL #4, 202 FEET<br>X484,982.64, Y185,057.73, H3983.00 (base) |         |             |
|---|---------|-------------|---|---------|-------------|
| T-TIME SEC  | DIR DEG | SPEED KNOTS | T-TIME SEC  | DIR DEG | SPEED KNOTS |
| -30   | 357     | 12          | -30   | 005     | 14          |
| -20   | 003     | 13          | -20   | 005     | 12          |
| -10   | 003     | 11          | -10   | 006     | 12          |
| 0.0   | 357     | 11          | 0.0   | 019     | 11          |
| +10   | 357     | 11          | +10   | 015     | 13          |

TABLE

4

## T-TIME PILOT-BALLOON MEASURED WIND DATA

DATE 27 May 1982

SITE:WSD

TIME:1417 MDT

WSTM COORDINATES:

X= 488,580.00

Y= 185,045.00

H= 3,989.00

SITE:DON

TIME 1418 MDT

WSTM COORDINATES:

X= 511,988.37

Y= 247,396.36

H= 3,996.83

| LAYER MIDPOINT<br>METERS AGL | DIRECTION<br>DEGREES | SPEED<br>KNOTS |
|------------------------------|----------------------|----------------|
| SURFACE                      | 010                  | 07             |
| 150                          | 033                  | 07             |
| 210                          | 025                  | 06             |
| 270                          | 020                  | 11             |
| 330                          | 005                  | 12             |
| 390                          | 360                  | 13             |
| 500                          | 353                  | 08             |
| 650                          | 334                  | 09             |
| 800                          | 294                  | 11             |
| 950                          | 296                  | 14             |
| 1150                         | 298                  | 16             |
| 1350                         | 286                  | 18             |
| 1550                         | 281                  | 19             |
| 1750                         | 267                  | 18             |
| 2000                         | 254                  | 16             |

Data obtained from Nike-Herc  
Radar Tracked pilot-balloon  
observation.

| LAYER MIDPOINT<br>METERS AGL | DIRECTION<br>DEGREES | SPEED<br>KNOTS |
|------------------------------|----------------------|----------------|
| SURFACE                      | 030                  | 05             |
| 150                          | 023                  | 13             |
| 210                          | 020                  | 14             |
| 270                          | 016                  | 14             |
| 330                          | 012                  | 14             |
| 390                          | 009                  | 14             |
| 500                          | 004                  | 13             |
| 650                          | 350                  | 08             |
| 800                          | 310                  | 06             |
| 950                          | 286                  | 08             |
| 1150                         | 281                  | 13             |
| 1350                         | 280                  | 16             |
| 1550                         | 280                  | 18             |
| 1750                         | 285                  | 22             |
| 2000                         | 282                  | 23             |

Data obtained from RAPTS T-9  
radar Tracked pilot-balloon  
observation.

TABLE 5

AIMING AND T-TIME COMPUTER MET MESSAGES  
27 May 1982

WSD 1100 MDT

METCM1324064

271700122875

00533005 29980875

01584018 29850865

02324009 29580840

03409005 29260802

04318003 28800757

05265004 28240713

06389006 27780671

07309009 27300630

08331013 26890592

09331017 26570555

10351016 26260521

11357020 25940488

12362022 25440442

LC-37 1200 MDT

METCM1324063

271800124873

00409004 29770873

01597014 29670863

02614012 29430839

03629012 29050800

04005008 28620754

05447006 28250711

06411016 27810669

07405019 27410629

08350024 27110591

09330028 26700554

10338038 26240520

11347040 25930487

12350039 25370441

WSD 1300 MDT

METCM1324064

271900122875

00569010 29920875

01002011 29740865

02024011 29380840

03614004 29010802

04425006 28590755

05413009 28190711

06400015 27790669

07383021 27420629

08355031 27050591

09341035 26670555

10352034 26270520

11367033 25850487

12370034 25290441

LC-37 1400 MDT

METCM1324063

272000124872

00418008 29850872

01639018 29710862

02633014 29430838

03018007 29040800

04460007 28610754

05450018 28240710

06451020 27830668

07397020 27430628

08362024 27020590

09348028 26630554

10347028 26230519

11352020 25840486

12401038 25320440

STATION ALTITUDE 3489.00 FEET MSL  
27 MAY 62 1100 MDT  
ASCENSION NO. 230

SIGNIFICANT LEVEL DATA  
1470020230  
WHITE SANDS

GEODETIC COORDINATES  
32.40043 LAT DEG  
106.37033 LONG DEG

TABLE-6

| PRESSURE<br>MILLIBARS | GEOMETRIC<br>ALTITUDE<br>MFL FEET | TEMPERATURE    |                        | REL. HUMID.<br>PERCENT |
|-----------------------|-----------------------------------|----------------|------------------------|------------------------|
|                       |                                   | AIR<br>DEGREES | DEWPOINT<br>CENTIGRADE |                        |
| 674.9                 | 3989.0                            | 25.2           | 5.4                    | 26.0                   |
| 650.0                 | 4416.6                            | 22.3           | 2.9                    | 28.0                   |
| 773.8                 | 7466.3                            | 15.9           | 2.3                    | 40.0                   |
| 700.0                 | 10219.0                           | 6.7            | -1.0                   | 50.0                   |
| 656.7                 | 11931.0                           | 2.4            | -1.0                   | 75.0                   |
| 630.7                 | 12999.0                           | -1.1           | -2.7                   | 89.0                   |
| 605.3                 | 14072.9                           | -4.0           | -4.7                   | 95.0                   |
| 500.0                 | 18955.1                           | -12.9          | -13.8                  | 95.0                   |
| 467.9                 | 20610.6                           | -16.1          | -17.0                  | 88.0                   |
| 400.0                 | 24437.2                           | -24.1          | -26.4                  | 61.0                   |

STATION ALTITUDE 3989.0 FEET MSL  
27 MAY 82 1100 MDT  
ASCENSION NO. 236

UPPER AIR DATA  
147000ZJCU  
WHITE CLOUDS

GEODETIC COORDINATES  
32.40043 LAT DEG  
100.57033 LONG DEG

TABLE-7

| GEOMETRIC<br>ALTITUDE<br>MSL FEET | PRESSURE<br>MILLIBARS | TEMPERATURE<br>AIR DEGREE<br>CENTIGRADE | REL. HUM.<br>PERCENT | DENSITY<br>GM/CM <sup>3</sup><br>MLTER | SPEED OF<br>SOUND<br>M/SEC | WIND DATA<br>DIRECTION<br>SPEED<br>KNOTS | INDEX<br>OF<br>REFRACTION |
|-----------------------------------|-----------------------|---|----------------------|--|----------------------------|--|---------------------------|
| 3989.0                            | 874.9                 | 25.2                                    | 28.0                 | 1017.0                                 | 074.2                      | 300.0                                    | 1.000265                  |
| 4000.0                            | 874.6                 | 25.2                                    | 28.0                 | 1017.4                                 | 074.2                      | 299.0                                    | 1.000265                  |
| 4500.0                            | 859.4                 | 23.4                                    | 28.0                 | 1000.0                                 | 072.1                      | 290.0                                    | 1.000259                  |
| 5000.0                            | 844.5                 | 21.9                                    | 28.8                 | 992.9                                  | 070.3                      | 278.7                                    | 1.000254                  |
| 5500.0                            | 829.7                 | 20.6                                    | 31.1                 | 980.4                                  | 068.9                      | 264.2                                    | 1.000252                  |
| 6000.0                            | 815.1                 | 19.4                                    | 33.4                 | 967.1                                  | 067.0                      | 243.4                                    | 1.000249                  |
| 6500.0                            | 800.6                 | 18.2                                    | 35.6                 | 954.0                                  | 065.2                      | 233.0                                    | 1.000246                  |
| 7000.0                            | 785.7                 | 17.0                                    | 37.9                 | 941.1                                  | 064.0                      | 221.3                                    | 1.000243                  |
| 7500.0                            | 772.9                 | 15.8                                    | 40.2                 | 928.5                                  | 063.4                      | 210.0                                    | 1.000240                  |
| 8000.0                            | 758.9                 | 14.1                                    | 43.5                 | 917.1                                  | 061.4                      | 195.0                                    | 1.000237                  |
| 8500.0                            | 745.2                 | 12.4                                    | 46.8                 | 905.9                                  | 059.5                      | 179.0                                    | 1.000233                  |
| 9000.0                            | 731.3                 | 10.8                                    | 50.0                 | 894.9                                  | 057.3                      | 160.4                                    | 1.000230                  |
| 9500.0                            | 716.6                 | 9.1                                     | 53.3                 | 884.0                                  | 055.0                      | 150.0                                    | 1.000226                  |
| 10000.0                           | 703.6                 | 7.4                                     | 56.6                 | 873.3                                  | 053.0                      | 142.4                                    | 1.000223                  |
| 10500.0                           | 692.7                 | 6.0                                     | 60.8                 | 861.8                                  | 051.9                      | 130.2                                    | 1.000220                  |
| 11000.0                           | 679.9                 | 4.7                                     | 65.8                 | 849.7                                  | 050.4                      | 118.1                                    | 1.000217                  |
| 11500.0                           | 667.3                 | 3.5                                     | 70.7                 | 837.7                                  | 049.0                      | 106.7                                    | 1.000214                  |
| 12000.0                           | 655.0                 | 2.2                                     | 75.9                 | 826.2                                  | 047.4                      | 95.0                                     | 1.000211                  |
| 12500.0                           | 642.7                 | 1.5                                     | 82.5                 | 815.0                                  | 045.5                      | 84.7                                     | 1.000208                  |
| 13000.0                           | 630.7                 | -1.1                                    | 89.0                 | 803.2                                  | 043.5                      | 74.4                                     | 1.000205                  |
| 13500.0                           | 618.7                 | -2.5                                    | 91.8                 | 794.0                                  | 041.9                      | 64.0                                     | 1.000201                  |
| 14000.0                           | 607.0                 | -3.8                                    | 94.6                 | 782.9                                  | 040.2                      | 54.4                                     | 1.000197                  |
| 14500.0                           | 595.3                 | -4.6                                    | 94.8                 | 770.7                                  | 039.0                      | 44.9                                     | 1.000193                  |
| 15000.0                           | 583.7                 | -5.7                                    | 94.6                 | 758.4                                  | 037.9                      | 36.0                                     | 1.000189                  |
| 15500.0                           | 572.4                 | -6.6                                    | 94.4                 | 746.4                                  | 036.4                      | 27.0                                     | 1.000185                  |
| 16000.0                           | 561.3                 | -7.5                                    | 94.2                 | 734.5                                  | 035.7                      | 18.1                                     | 1.000181                  |
| 16500.0                           | 550.4                 | -8.4                                    | 94.0                 | 722.8                                  | 034.5                      | 10.1                                     | 1.000177                  |
| 17000.0                           | 539.0                 | -9.3                                    | 93.8                 | 711.4                                  | 033.4                      | 19.0                                     | 1.000174                  |
| 17500.0                           | 529.3                 | -10.2                                   | 93.6                 | 700.1                                  | 032.3                      | 194.0                                    | 1.000170                  |
| 18000.0                           | 519.0                 | -11.2                                   | 93.4                 | 688.9                                  | 031.1                      | 177.4                                    | 1.000167                  |
| 18500.0                           | 509.0                 | -12.1                                   | 93.2                 | 678.0                                  | 030.0                      | 169.4                                    | 1.000164                  |
| 19000.0                           | 499.1                 | -13.0                                   | 92.9                 | 667.3                                  | 028.9                      | 150.5                                    | 1.000160                  |
| 19500.0                           | 489.2                 | -14.0                                   | 91.4                 | 656.5                                  | 027.7                      | 131.7                                    | 1.000157                  |
| 20000.0                           | 479.5                 | -14.7                                   | 89.8                 | 646.0                                  | 026.5                      | 112.3                                    | 1.000154                  |
| 20500.0                           | 470.0                 | -15.9                                   | 88.3                 | 635.6                                  | 025.5                      | 92.8                                     | 1.000151                  |
| 21000.0                           | 460.5                 | -16.9                                   | 87.3                 | 625.3                                  | 024.0                      | 73.2                                     | 1.000147                  |
| 21500.0                           | 451.2                 | -18.0                                   | 86.4                 | 615.2                                  | 022.7                      | 53.6                                     | 1.000145                  |
| 22000.0                           | 442.0                 | -19.0                                   | 85.5                 | 605.3                                  | 021.4                      | 34.0                                     | 1.000142                  |
| 22500.0                           | 433.0                 | -20.3                                   | 84.5                 | 595.5                                  | 020.1                      | 14.5                                     | 1.000139                  |
| 23000.0                           | 424.4                 | -21.1                                   | 83.6                 | 585.9                                  | 018.8                      | 0.0                                      | 1.000136                  |



STATION ALTITUDE 3989.00 Feet MSL  
27 MAY 82  
ASCENSION NO. 236

UPPER AIR DATA  
14700Z02JUN  
WHITE SANDS

GEODETIC COORDINATES  
32.40043 LAT DEG  
106.57033 LONG DEG

TABLE-7 cont'd

| GEOMETRIC<br>ALTITUDE<br>MSL FEET | PRESSURE<br>MILLIBARS | TEMPERATURE<br>AIR DEGREES<br>CENTIGRADE | REL.HUM.<br>PERCENT | DENSITY<br>GM/CUBIC<br>METER | SPEED OF<br>SOUND<br>KNOTS | WIND DATA<br>DIRECTION,<br>DEGREES(TN) | SPEED<br>KNOTS | INDEX<br>OF<br>REFRACTION |
|-----------------------------------|-----------------------|--|---------------------|------------------------------|----------------------------|--|----------------|---------------------------|
| 23500.0                           | 415.7                 | -22.1                                    | 82.7                | 570.4                        | 617.4                      |  |                | 1.000134                  |
| 24000.0                           | 407.2                 | -23.2                                    | 81.8                | 567.1                        | 610.2                      |  |                | 1.000131                  |

STATION ALTITUDE 5989-10 FEET MSL  
27 MAY 82 1100 MDT  
ASCENSION NO. 236

MANDATORY LEVELS  
1470020236  
WHITE SANDS  
TABLE-8

GEOGRAPHIC COORDINATES  
32.40043 LAT DEG  
106.37033 LONG DEG

| PRESSURE GEOPOTENTIAL<br>MILLIBARS | FEET   | TEMPERATURE<br>AIR DEGREES<br>CENTIGRADE | TEMPERATURE<br>DEW POINT<br>CENTIGRADE | REL. HUMIDITY<br>PERCENT | WIND DATA                 |                |
|------------------------------------|--------|--|--|--------------------------|---------------------------|----------------|
|                                    |        |  |  |                          | DIRECTION<br>DEGREES (TN) | SPEED<br>KNOTS |
| 150.0                              | 4313.  | 22.3                                     | 2.9                                    | 20.                      | 285.5                     | 4.1            |
| 100.0                              | 6528.  | 18.2                                     | 2.0                                    | 30.                      | 232.0                     | 3.9            |
| 750.0                              | 8326.  | 13.0                                     | 1.0                                    | 40.                      | 184.0                     | 3.3            |
| 700.0                              | 10209. | 6.7                                      | -1.0                                   | 50.                      | 165.0                     | 3.9            |
| 650.0                              | 12190. | 1.5                                      | -1.0                                   | 79.                      | 185.2                     | 0.3            |
| 600.0                              | 14284. | -4.4                                     | -5.1                                   | 95.                      | 182.6                     | 12.1           |
| 550.0                              | 16520. | -8.5                                     | -9.2                                   | 94.                      | 186.1                     | 17.5           |
| 500.0                              | 18928. | -12.9                                    | -13.0                                  | 93.                      | 200.9                     | 18.3           |
| 450.0                              | 21541. | -19.1                                    | -19.0                                  | 80.                      |                           |                |
| 400.0                              | 24397. | -24.1                                    | -26.4                                  | 81.                      |                           |                |

STATION ALTITUDE 4351.7 FLEET MSL  
27 MAY 82 1200 MDT  
ASCENSION NO. 48

SIGNIFICANT LEVEL DATA  
1470100040  
LC-37

GEODLTIC COORDINATES  
32.40175 LAT DEG  
100.31232 LONG DEG

TABLE-9

| PRESSURE<br>INLLIARS | GEOMETRIC<br>ALTITUDE<br>MSL FEET | TEMPERATURE    |                        | REL. HUM.<br>PERCENT |
|----------------------|-----------------------------------|----------------|------------------------|----------------------|
|                      |                                   | AIR<br>DEGREES | DEWPOINT<br>CENTIGRADE |                      |
| 673.2                | 4051.4                            | 23.3           | 7.4                    | 36.0                 |
| 650.0                | 4819.6                            | 21.0           | 6.2                    | 38.0                 |
| 785.0                | 7055.4                            | 14.7           | 2.9                    | 45.0                 |
| 746.2                | 8382.5                            | 11.5           | 1.5                    | 50.0                 |
| 700.0                | 10200.3                           | 7.7            | -.6                    | 55.0                 |
| 649.4                | 12213.8                           | 2.0            | -3.7                   | 66.0                 |
| 623.4                | 13296.1                           | -.5            | -4.4                   | 75.0                 |
| 606.4                | 14020.8                           | -1.2           | -5.2                   | 74.0                 |
| 589.6                | 14756.2                           | -2.8           | -5.9                   | 79.0                 |
| 556.2                | 16267.0                           | -6.7           | -7.5                   | 44.0                 |
| 539.8                | 17034.7                           | -8.1           | -6.9                   | 94.0                 |
| 523.8                | 17800.4                           | -10.7          | -13.9                  | 77.0                 |
| 519.8                | 17994.1                           | -11.6          | -10.3                  | 68.0                 |
| 507.8                | 18562.0                           | -12.6          | -10.2                  | 63.0                 |
| 500.0                | 18970.8                           | -12.7          | -11.5                  | 67.0                 |
| 492.2                | 19364.9                           | -13.7          | -20.8                  | 55.0                 |
| 484.2                | 19774.4                           | -14.2          | -27.2                  | 32.0                 |
| 468.6                | 20569.3                           | -15.7          | -28.2                  | 33.0                 |
| 438.8                | 22207.0                           | -19.7          | -33.8                  | 27.0                 |
| 423.6                | 23063.8                           | -22.3          | -34.4                  | 32.0                 |
| 400.0                | 24441.9                           | -25.2          | -39.4                  | 25.0                 |
| 387.6                | 25192.4                           | -26.6          | -40.2                  | 26.0                 |

STATION: ALTITUDE 4051.7 FEET MSL  
27 MAY 62 1200 ZDT  
ASCENSION NO. 48

UPPER AIR DATA  
1470100040  
LC-37

TABLE-10

GEODETIC COORDINATES  
32.40175 LAT DEG  
106.31232 LONG DEG

| GEOMETRIC ALTITUDE<br>MSL FEET | PRESSURE<br>MILLIBARS | TEMPERATURE<br>AIR DEWPOINT<br>DEGREES CENTIGRADE | REL. HUM.<br>PERCENT | DENSITY<br>GM/CUB. METER | SPEED OF<br>SOUND<br>KNOTS | DIRECTION<br>WIND (IN)<br>DEGREES (IN) | WIND DATA<br>SPEED<br>KNOTS | INDEX<br>OF<br>REFRACT, ON |
|--------------------------------|-----------------------|---|----------------------|--------------------------|----------------------------|--|-----------------------------|----------------------------|
| 4051.4                         | 873.2                 | 23.3  | 7.4                  | 1021.5                   | 672.3                      | 230.0                                  | 4.1                         | 1.000272                   |
| 4500.0                         | 859.6                 | 22.0  | 36.0                 | 1010.3                   | 670.7                      | 234.0                                  | 3.0                         | 1.000204                   |
| 5000.0                         | 844.6                 | 20.5  | 37.2                 | 997.8                    | 669.0                      | 226.4                                  | 5.3                         | 1.000263                   |
| 5500.0                         | 829.7                 | 19.1  | 38.6                 | 985.0                    | 667.3                      | 242.7                                  | 8.6                         | 1.000259                   |
| 6000.0                         | 815.0                 | 17.7  | 40.1                 | 972.5                    | 665.7                      | 243.0                                  | 12.2                        | 1.000255                   |
| 6500.0                         | 800.7                 | 16.3  | 41.7                 | 960.1                    | 664.0                      | 253.0                                  | 12.5                        | 1.000250                   |
| 7000.0                         | 786.5                 | 14.9  | 43.3                 | 947.9                    | 662.4                      | 257.7                                  | 11.9                        | 1.000246                   |
| 7500.0                         | 772.5                 | 13.6  | 44.8                 | 935.0                    | 660.9                      | 259.0                                  | 10.1                        | 1.000242                   |
| 8000.0                         | 758.6                 | 12.4  | 46.7                 | 922.2                    | 659.5                      | 1.0                                    | 8.2                         | 1.000236                   |
| 8500.0                         | 745.0                 | 11.3  | 48.6                 | 909.4                    | 658.1                      | 340.1                                  | 5.9                         | 1.000234                   |
| 9000.0                         | 731.5                 | 10.2  | 50.3                 | 896.3                    | 656.9                      | 313.3                                  | 4.8                         | 1.000230                   |
| 9500.0                         | 718.2                 | 9.2   | 51.7                 | 883.3                    | 655.6                      | 275.0                                  | 5.3                         | 1.000226                   |
| 10000.0                        | 705.2                 | 8.1   | 53.1                 | 870.6                    | 654.4                      | 251.4                                  | 7.3                         | 1.000222                   |
| 10500.0                        | 692.2                 | 6.9   | 54.4                 | 858.0                    | 652.9                      | 230.0                                  | 10.0                        | 1.000218                   |
| 11000.0                        | 679.4                 | 5.4   | 56.6                 | 847.1                    | 651.2                      | 231.7                                  | 12.4                        | 1.000215                   |
| 11500.0                        | 666.9                 | 4.0   | 59.4                 | 835.8                    | 649.5                      | 229.0                                  | 15.6                        | 1.000211                   |
| 12000.0                        | 654.6                 | 2.6   | 62.1                 | 824.7                    | 647.8                      | 229.2                                  | 18.1                        | 1.000208                   |
| 12500.0                        | 642.4                 | 1.3   | 64.8                 | 813.1                    | 646.3                      | 226.1                                  | 19.1                        | 1.000204                   |
| 13000.0                        | 630.4                 | .2  | 68.4                 | 801.3                    | 644.9                      | 222.4                                  | 19.8                        | 1.000201                   |
| 13500.0                        | 618.5                 | -.7   | 72.5                 | 788.8                    | 643.9                      | 213.1                                  | 20.2                        | 1.000198                   |
| 14000.0                        | 606.9                 | -.2   | 74.7                 | 775.3                    | 643.3                      | 207.7                                  | 20.9                        | 1.000194                   |
| 14500.0                        | 595.4                 | -1.2  | 77.3                 | 763.7                    | 642.0                      | 199.0                                  | 21.9                        | 1.000191                   |
| 15000.0                        | 584.1                 | -2.2  | 77.3                 | 752.5                    | 640.0                      | 192.0                                  | 23.2                        | 1.000184                   |
| 15500.0                        | 572.9                 | -3.4  | 81.4                 | 741.7                    | 639.1                      | 189.2                                  | 25.2                        | 1.000185                   |
| 16000.0                        | 562.0                 | -4.7  | 86.4                 | 731.1                    | 637.5                      | 186.5                                  | 27.3                        | 1.000182                   |
| 16500.0                        | 551.2                 | -6.0  | 91.3                 | 720.1                    | 636.1                      | 186.9                                  | 30.1                        | 1.000178                   |
| 17000.0                        | 540.5                 | -7.1  | 94.0                 | 708.7                    | 635.0                      | 180.3                                  | 33.2                        | 1.000175                   |
| 17500.0                        | 530.0                 | -8.0  | 94.0                 | 699.0                    | 632.9                      | 189.4                                  | 35.7                        | 1.000169                   |
| 18000.0                        | 519.7                 | -9.7  | 93.7                 | 691.3                    | 630.4                      | 190.3                                  | 37.5                        | 1.000163                   |
| 18500.0                        | 509.5                 | -11.6   | 87.9                 | 680.0                    | 629.0                      | 191.0                                  | 36.9                        | 1.000160                   |
| 19000.0                        | 499.4                 | -12.5   | 83.7                 | 667.4                    | 629.0                      | 193.0                                  | 39.9                        | 1.000157                   |
| 19500.0                        | 489.5                 | -13.9   | 85.1                 | 657.2                    | 627.0                      | 194.0                                  | 40.2                        | 1.000152                   |
| 20000.0                        | 479.8                 | -14.6   | 47.4                 | 646.2                    | 626.0                      | 190.2                                  | 40.1                        | 1.000148                   |
| 20500.0                        | 470.3                 | -15.5   | 32.3                 | 635.0                    | 625.4                      | 194.0                                  | 39.2                        | 1.000145                   |
| 21000.0                        | 460.8                 | -16.7   | 32.9                 | 623.0                    | 624.0                      | 192.7                                  | 38.2                        | 1.000142                   |
| 21500.0                        | 451.6                 | -17.0   | 31.5                 | 610.2                    | 622.5                      | 192.0                                  | 37.8                        | 1.000140                   |
| 22000.0                        | 442.5                 | -17.8   | 29.6                 | 600.0                    | 620.9                      | 194.0                                  | 37.8                        | 1.000137                   |
| 22500.0                        | 433.5                 | -19.2   | 27.8                 | 597.8                    | 619.2                      | 199.7                                  | 30.3                        | 1.000135                   |
| 23000.0                        | 424.7                 | -20.6   | 28.7                 | 589.2                    | 617.4                      | 204.0                                  | 36.5                        | 1.000133                   |
| 23500.0                        | 416.0                 | -22.1   | 31.6                 | 579.7                    | 616.0                      | 200.4                                  | 36.6                        | 1.000131                   |

STATION ALTITUDE 4351.37 FEET MSL  
27 MAY 02 1200 MDT  
ASCENSION NO. 43

UPPER AIR DATA  
1470100040  
LC-37

TABLE-10 cont'd

GEODETIC COORDINATES  
32.40175 LAT DEG  
106.31232 LONG DEG

| GEOMETRIC<br>ALTITUDE<br>MSL FEET | PRESSURE<br>MILLIBARS | TEMPERATURE<br>AIR<br>DEGREES<br>CENTIGRADE | REL. HUM.<br>PERCENT | DENSITY<br>GM/CUBIC<br>METER | SPEED OF<br>SOUND<br>METERS<br>PER SECOND | WIND DATA<br>DIRECTION<br>(DEGREES TRUE) | SPEED<br>KNOTS | INDEX<br>OF<br>REFRACTION |
|-----------------------------------|-----------------------|---|----------------------|------------------------------|---|--|----------------|---------------------------|
| 24000.0                           | 407.4                 | -24.3                                       | 27.2                 | 570.2                        | 014.7                                     | 210.1                                    | 30.6           | 1.000128                  |
| 24500.0                           | 399.0                 | -25.3                                       | 25.1                 | 560.6                        | 013.4                                     |  |                | 1.000126                  |
| 25000.0                           | 390.7                 | -26.2                                       | 25.7                 | 551.2                        | 012.2                                     |  |                | 1.000124                  |

STATION ALTITUDE 4051.37 FEET MSL  
27 MAY 82 1200 MDT  
ASCENSION .10. 48

HANDATORY LEVELS  
1470100040  
LC-37

STUDY COORDINATES  
32.40175 LAT DEG  
100.31232 LONG DEG

TABLE-11

| PRESSURE GEOPOTENTIAL |        | TEMPERATURE    |                        | REL. HUMIDITY<br>PERCENT | WIND DATA                 |                |
|-----------------------|--------|----------------|------------------------|--------------------------|---------------------------|----------------|
| MILLIBARS             | FEET   | AIR<br>DEGREES | DEWPOINT<br>CENTIGRADE |                          | DIRECTION<br>DEGREES (TN) | SPEED<br>KNOTS |
| 850.0                 | 4816.  | 21.0           | 6.2                    | 38.                      | 317.7                     | 4.2            |
| 800.0                 | 6523.  | 16.2           | 3.7                    | 43.                      | 353.2                     | 12.5           |
| 750.0                 | 8309.  | 11.7           | 1.5                    | 50.                      | 354.5                     | 6.7            |
| 700.0                 | 10190. | 7.7            | -0.6                   | 53.                      | 245.6                     | 8.3            |
| 650.0                 | 12176. | 2.1            | -3.0                   | 60.                      | 228.5                     | 10.7           |
| 600.0                 | 14282. | -1.4           | -5.5                   | 70.                      | 203.0                     | 21.4           |
| 550.0                 | 16534. | -7.2           | -8.0                   | 94.                      | 167.1                     | 30.4           |
| 500.0                 | 18944. | -12.7          | -17.5                  | 67.                      | 193.2                     | 39.8           |
| 450.0                 | 21556. | -18.2          | -31.7                  | 29.                      | 192.6                     | 37.8           |
| 400.0                 | 24401. | -25.2          | -39.4                  | 25.                      |                           |                |

GEODETIC COORDINATES  
 32.40043 LAT DEG  
 106.37033 LONG DEG

SIGNIFICANT LEVEL DATA  
 1470020237  
 WHITE SANDS

TABLE-12

STATION ALTITUDE 3989.0 FEET MSL  
 27 MAY 62 1300 MDT  
 ASCENSION NO. 237

| PRESSURE  | GEOMETRIC | TEMPERATURE        | REL. HUM. |
|-----------|-----------|--------------------|-----------|
| MILLIBARS | ALTITUDE  | AIR DEWPOINT       | PERCENT   |
| MSL FEET  |           | DEGREES CENTIGRADE |           |
| 874.5     | 3989.0    | 24.6               | 7.7       |
| 850.0     | 4000.6    | 20.4               | 5.6       |
| 787.9     | 6929.0    | 14.6               | 2.2       |
| 700.0     | 10171.5   | 6.9                | -2.0      |
| 690.1     | 10555.7   | 5.7                | -2.1      |
| 655.9     | 11916.5   | 2.7                | -2.4      |
| 605.7     | 14018.9   | -2.0               | -4.0      |
| 548.7     | 16578.6   | -7.5               | -14.5     |
| 517.1     | 18087.8   | -11.2              | -13.4     |
| 500.0     | 18933.6   | -13.6              | -15.6     |
| 427.1     | 22812.1   | -22.3              | -25.1     |
| 400.0     | 24388.9   | -25.1              | -28.4     |
| 351.7     | 27426.5   | -31.6              | -36.4     |

STATION ALTITUDE 3970.0 FEET MSL  
27 MAY 62 1300 MDT  
ASCENSION NO. 237

UNPOLL AIR DATA  
147002025/  
WHITE SANDS  
TABLE-13

GEOMETRIC COORDINATES  
32.40043 LAT DEG  
106.57033 LONG DEG

| GEOMETRIC<br>ALTITUDE<br>MSL FEET | PRESSURE<br>MILLIBARS | TEMPERATURE<br>AIR<br>DEGREES<br>CENTIGRADE | REL. HUM.<br>PERCENT | DENSITY<br>GRAMS PER<br>CUBIC<br>METER | SPEED OF<br>SOUND<br>KNOTS | "WIND DATA"<br>DIRECTION (TN)<br>SPEED (TN) | INDEX<br>OF<br>REFRACTION |
|-----------------------------------|-----------------------|---|----------------------|--|----------------------------|---|---------------------------|
| 3989.0                            | 874.5                 | 24.6  | 34.0                 | 1018.5                                 | 675.8                      | 320.0                                       | 1.000272                  |
| 4000.0                            | 874.2                 | 24.5  | 34.1                 | 1018.3                                 | 675.7                      | 320.3                                       | 1.000272                  |
| 4500.0                            | 859.0                 | 22.0  | 36.5                 | 1009.7                                 | 670.7                      | 324.9                                       | 1.000267                  |
| 5000.0                            | 844.0                 | 19.9  | 38.5                 | 999.4                                  | 668.2                      | 333.4                                       | 1.000262                  |
| 5500.0                            | 829.1                 | 18.5  | 39.6                 | 986.5                                  | 666.6                      | 334.1                                       | 1.000257                  |
| 6000.0                            | 814.4                 | 17.1  | 40.8                 | 973.8                                  | 665.0                      | 343.5                                       | 1.000253                  |
| 6500.0                            | 800.1                 | 15.8  | 42.0                 | 961.2                                  | 663.4                      | 352.2                                       | 1.000248                  |
| 7000.0                            | 785.9                 | 14.4  | 43.2                 | 946.7                                  | 661.8                      | 363.5                                       | 1.000244                  |
| 7500.0                            | 771.7                 | 13.2  | 44.8                 | 935.5                                  | 660.4                      | 371.6                                       | 1.000240                  |
| 8000.0                            | 757.7                 | 12.1  | 46.3                 | 922.5                                  | 659.0                      | 377.4                                       | 1.000236                  |
| 8500.0                            | 744.0                 | 10.9  | 47.8                 | 909.7                                  | 657.6                      | 384.0                                       | 1.000232                  |
| 9000.0                            | 730.6                 | 9.7   | 49.4                 | 897.1                                  | 656.2                      | 387.0                                       | 1.000228                  |
| 9500.0                            | 717.4                 | 8.5   | 50.9                 | 884.7                                  | 654.8                      | 389.1                                       | 1.000224                  |
| 10000.0                           | 704.4                 | 7.3   | 52.5                 | 872.4                                  | 653.4                      | 389.5                                       | 1.000220                  |
| 10500.0                           | 691.5                 | 5.9   | 56.4                 | 860.9                                  | 651.7                      | 385.4                                       | 1.000217                  |
| 11000.0                           | 678.7                 | 4.7   | 60.9                 | 848.5                                  | 650.4                      | 383.3                                       | 1.000215                  |
| 11500.0                           | 666.2                 | 3.6   | 65.3                 | 836.1                                  | 649.1                      | 383.0                                       | 1.000212                  |
| 12000.0                           | 653.8                 | 2.5   | 69.7                 | 823.6                                  | 647.6                      | 383.7                                       | 1.000209                  |
| 12500.0                           | 641.6                 | 1.4   | 73.7                 | 811.7                                  | 646.5                      | 383.9                                       | 1.000206                  |
| 13000.0                           | 629.5                 | .3  | 77.8                 | 799.7                                  | 645.1                      | 383.0                                       | 1.000203                  |
| 13500.0                           | 617.7                 | -.8   | 81.8                 | 786.0                                  | 643.8                      | 383.0                                       | 1.000200                  |
| 14000.0                           | 606.1                 | -2.0  | 85.8                 | 776.4                                  | 642.5                      | 383.5                                       | 1.000196                  |
| 14500.0                           | 594.6                 | -3.0  | 89.7                 | 764.9                                  | 641.1                      | 383.5                                       | 1.000191                  |
| 15000.0                           | 583.2                 | -4.1  | 93.3                 | 753.5                                  | 639.7                      | 383.5                                       | 1.000186                  |
| 15500.0                           | 572.0                 | -5.2  | 96.8                 | 742.2                                  | 638.5                      | 383.5                                       | 1.000181                  |
| 16000.0                           | 561.1                 | -6.3  | 100.0                | 731.2                                  | 637.0                      | 383.5                                       | 1.000176                  |
| 16500.0                           | 550.4                 | -7.3  | 103.4                | 720.2                                  | 635.6                      | 383.5                                       | 1.000172                  |
| 17000.0                           | 539.7                 | -8.5  | 106.3                | 709.5                                  | 634.2                      | 383.5                                       | 1.000169                  |
| 17500.0                           | 529.2                 | -9.8  | 108.9                | 698.8                                  | 632.7                      | 383.5                                       | 1.000167                  |
| 18000.0                           | 518.9                 | -11.0                                       | 111.5                | 688.4                                  | 631.3                      | 383.5                                       | 1.000165                  |
| 18500.0                           | 508.7                 | -12.4                                       | 114.4                | 678.5                                  | 629.8                      | 383.5                                       | 1.000162                  |
| 19000.0                           | 498.7                 | -13.7                                       | 117.7                | 668.8                                  | 628.4                      | 383.5                                       | 1.000159                  |
| 19500.0                           | 488.6                 | -14.9                                       | 121.0                | 658.8                                  | 627.0                      | 383.5                                       | 1.000156                  |
| 20000.0                           | 478.8                 | -16.0                                       | 124.2                | 647.9                                  | 625.5                      | 383.5                                       | 1.000153                  |
| 20500.0                           | 469.2                 | -17.1                                       | 127.5                | 637.7                                  | 623.7                      | 383.5                                       | 1.000150                  |
| 21000.0                           | 459.7                 | -18.2                                       | 130.8                | 627.7                                  | 622.3                      | 383.5                                       | 1.000147                  |
| 21500.0                           | 450.5                 | -19.4                                       | 134.1                | 617.6                                  | 620.9                      | 383.5                                       | 1.000144                  |
| 22000.0                           | 441.4                 | -20.5                                       | 137.5                | 608.1                                  | 619.5                      | 383.5                                       | 1.000141                  |
| 22500.0                           | 432.6                 | -21.6                                       | 140.8                | 598.6                                  | 618.1                      | 383.5                                       | 1.000138                  |
| 23000.0                           | 423.8                 | -22.6                                       | 144.1                | 589.5                                  | 616.6                      | 383.5                                       | 1.000136                  |



STATION ALTITUDE 3989.0 FEET MSL  
27 MAY 62 1300 MDT  
ASCENSION NO. 237

UPPER AIR DATA  
1470020237  
WHITE SANDS

GEODETIC COORDINATES  
32.40043 LAT DEG  
106.37033 LONG DEG

TABLE-13 cont'd

| GEOMETRIC<br>ALTITUDE<br>MSL FEET | PRESSURE<br>MILLIBARS | TEMPERATURE<br>AIR<br>DEGREES<br>CENTIGRADE | REL. HUM.<br>PERCENT | DENSITY<br>GM./CUBIC<br>METER | SPEED OF<br>SOUND<br>M/SEC | WIND DATA<br>DIRECTION<br>SPEED (M)<br>KNOTS | INDEX<br>OF<br>REFRACTION |
|-----------------------------------|-----------------------|---|----------------------|-------------------------------|----------------------------|--|---------------------------|
| 23500.0                           | 413.1                 | -23.5                                       | 76.3                 | 576.9                         | 613.7                      | 200.7  | 1.000133                  |
| 24000.0                           | 403.5                 | -24.4                                       | 75.0                 | 569.0                         | 614.6                      | 207.6  | 1.000131                  |
| 24500.0                           | 393.1                 | -25.3                                       | 73.6                 | 559.4                         | 613.4                      | 203.6  | 1.000128                  |
| 25000.0                           | 389.8                 | -26.4                                       | 71.6                 | 550.0                         | 612.1                      | 210.9  | 1.000126                  |
| 25500.0                           | 381.6                 | -27.5                                       | 69.6                 | 540.9                         | 610.0                      | 213.9  | 1.000123                  |
| 26000.0                           | 373.6                 | -28.5                                       | 67.6                 | 531.9                         | 609.4                      |  | 1.000121                  |
| 26500.0                           | 365.8                 | -29.6                                       | 65.7                 | 523.0                         | 608.1                      |  | 1.000119                  |
| 27000.0                           | 358.1                 | -30.7                                       | 63.7                 | 514.4                         | 606.7                      |  | 1.000116                  |

STATION ALTITUDE 3,889.10 FEET MSL  
27 MAY 62 1300 MDT  
ASCENSION 110. 237

LABORATORY RESULTS  
1470020237  
WHITE SANDS  
TABLE-14

GEODOLIC COORDINATES  
32.40043 LAT DEG  
106.37033 LONG DEG

| PRESSURE GEOPOTENTIAL<br>MILLIBARS | FEET   | TEMPERATURE<br>AIR<br>DEGREES CELSIUS | TEMPERATURE<br>DEW POINT<br>DEGREES CELSIUS | HUMIDITY<br>PERCENT | WIND DATA     |                |
|------------------------------------|--------|---------------------------------------|---|---------------------|---------------|----------------|
|                                    |        |                                       |   |                     | VELOCITY (KT) | SPEED<br>KNOTS |
| 850.0                              | 4797.  | 20.4                                  | 5.0   | 36.                 | 345.0         | 0.0            |
| 800.0                              | 6500.  | 15.8                                  | 2.9   | 42.                 | 343.3         | 4.2            |
| 750.0                              | 8284.  | 11.4                                  | .5  | 47.                 | 238.3         | 5.8            |
| 700.0                              | 10161. | 6.9                                   | -2.0  | 53.                 | 227.4         | 10.9           |
| 650.0                              | 12144. | 2.2                                   | -2.5  | 71.                 | 222.9         | 18.8           |
| 600.0                              | 14249. | -2.5                                  | -5.0  | 83.                 | 202.0         | 28.1           |
| 550.0                              | 16497. | -7.4                                  | -14.0                                       | 59.                 | 193.0         | 34.4           |
| 500.0                              | 18907. | -13.6                                 | -15.0                                       | 83.                 | 204.1         | 32.0           |
| 450.0                              | 21508. | -19.4                                 | -21.9                                       | 80.                 | 200.3         | 34.6           |
| 400.0                              | 24348. | -25.1                                 | -28.4                                       | 74.                 | 200.5         | 30.0           |

STATION ALTITUDE 4051.17 FEET MSL  
27 MAY 82  
ASCENSION NO. 49

SIGNIFICANT LEVEL DATA  
1470100049  
LC-37

TABLE -15

| GEOMETRIC ALTITUDE<br>MILLIBARS MSL FEET | TEMPERATURE<br>AIR DEWPOINT<br>DEGREES CENTIGRADE | REL. HUMID.<br>PERCENT |
|--|---|------------------------|
| 672.4 4051.4                             | 24.0 6.7  | 33.0                   |
| 850.0 4794.2                             | 21.1 4.2  | 33.0                   |
| 766.5 7691.0                             | 12.9 2.5  | 49.0                   |
| 720.9 9374.7                             | 9.5 -1.2  | 47.0                   |
| 700.0 10174.2                            | 7.3 -1.1  | 55.0                   |
| 675.8 11122.8                            | 5.0 -2.6  | 54.0                   |
| 632.0 12908.2                            | .8 -4.0   | 70.0                   |
| 589.5 14733.9                            | -3.5 -11.0  | 54.0                   |
| 564.3 15864.5                            | -6.0 -17.4  | 40.0                   |
| 547.7 16631.0                            | -7.7 -18.3  | 42.0                   |
| 531.3 17405.9                            | -9.8 -17.5  | 53.0                   |
| 500.0 18937.3                            | -13.2 -25.7                                       | 34.0                   |
| 475.0 20214.6                            | -16.4 -24.0                                       | 44.0                   |
| 452.0 21435.4                            | -19.6 -24.0                                       | 68.0                   |
| 429.4 22686.4                            | -20.8 -25.5                                       | 66.0                   |
| 419.2 23269.9                            | -22.0 -26.9                                       | 53.0                   |
| 414.8 23525.4                            | -22.1 -27.7                                       | 60.0                   |
| 407.5 23954.6                            | -22.8 -28.6                                       | 59.0                   |
| 400.0 24402.0                            | -23.9 -28.9                                       | 63.0                   |

STATION ALTITUDE 4051.17 FEET MSL  
27 MAY 82  
ASCENSION NO. 49

STATION ALTITUDE 4051.37 FEET MSL  
27 MAY 62 1400 MDT  
ASCENSION NO. 49

UPPER AIR DATA  
1470100049  
LC-37

TABLE-16

GEODETIC COORDINATES  
32.40175 LAT DEG  
106.51232 LONG DEG

| GEOMETRIC ALTITUDE<br>MSL FEET | PRESSURE<br>MILLIBARS | TEMPERATURE<br>AIR DEGREES<br>DEWPOINT<br>CENTIGRADE | REL. HUM.<br>PERCENT | DENSITY<br>GM/CM <sup>3</sup><br>METER | SPEED OF<br>SOUND<br>M/SEC | WIND DATA<br>DIRECTION<br>SPEED<br>KNOTS | INDEX<br>OF<br>REFRACTION |
|--------------------------------|-----------------------|--|----------------------|--|----------------------------|--|---------------------------|
| 4051.4                         | 872.4                 | 24.0   | 53.0                 | 1010.4                                 | 675.0                      | 259.0                                    | 1.000219                  |
| 4500.0                         | 850.8                 | 22.2   | 53.0                 | 1008.6                                 | 670.9                      | 259.1                                    | 1.000203                  |
| 5000.0                         | 830.8                 | 20.5   | 54.1                 | 997.2                                  | 665.8                      | 259.7                                    | 1.000256                  |
| 5500.0                         | 820.9                 | 19.1   | 56.9                 | 984.3                                  | 667.2                      | 250.3                                    | 1.000250                  |
| 6000.0                         | 814.2                 | 17.7   | 59.7                 | 971.0                                  | 665.6                      | 244.3                                    | 1.000252                  |
| 6500.0                         | 799.8                 | 16.3   | 42.4                 | 959.1                                  | 664.0                      | 301.0                                    | 1.000209                  |
| 7000.0                         | 765.6                 | 14.9   | 45.2                 | 940.8                                  | 662.4                      | 330.2                                    | 1.000206                  |
| 7500.0                         | 771.7                 | 13.4   | 47.9                 | 934.7                                  | 660.7                      | 310.5                                    | 1.000202                  |
| 8000.0                         | 757.9                 | 12.3   | 48.0                 | 921.0                                  | 659.3                      | 271.5                                    | 1.000253                  |
| 8500.0                         | 744.2                 | 11.3   | 47.4                 | 908.6                                  | 658.1                      | 257.0                                    | 1.000253                  |
| 9000.0                         | 730.8                 | 10.3   | 48.3                 | 893.6                                  | 656.9                      | 253.5                                    | 1.000228                  |
| 9500.0                         | 717.6                 | 9.2  | 53.3                 | 882.9                                  | 655.3                      | 253.4                                    | 1.000223                  |
| 10000.0                        | 704.5                 | 7.8  | 56.0                 | 871.0                                  | 654.5                      | 250.7                                    | 1.000221                  |
| 10500.0                        | 691.6                 | 6.5  | 57.6                 | 860.9                                  | 652.5                      | 250.1                                    | 1.000214                  |
| 11000.0                        | 670.9                 | 5.3  | 60.5                 | 834.8                                  | 649.6                      | 232.0                                    | 1.000210                  |
| 11500.0                        | 600.3                 | 4.1  | 63.9                 | 822.8                                  | 645.2                      | 240.9                                    | 1.000207                  |
| 12000.0                        | 653.9                 | 2.9  | 67.3                 | 811.0                                  | 640.8                      | 230.0                                    | 1.000204                  |
| 12500.0                        | 641.8                 | 1.8  | 69.3                 | 799.4                                  | 640.4                      | 229.0                                    | 1.000200                  |
| 13000.0                        | 629.8                 | .6   | 65.5                 | 787.9                                  | 640.9                      | 221.3                                    | 1.000195                  |
| 13500.0                        | 617.9                 | -6   | 61.6                 | 776.5                                  | 640.4                      | 213.0                                    | 1.000190                  |
| 14000.0                        | 606.2                 | -1.8   | 57.8                 | 765.5                                  | 640.0                      | 207.0                                    | 1.000165                  |
| 14500.0                        | 594.8                 | -2.9   | 52.2                 | 754.3                                  | 639.3                      | 202.4                                    | 1.000160                  |
| 15000.0                        | 583.5                 | -4.1   | 45.2                 | 743.1                                  | 638.1                      | 199.0                                    | 1.000175                  |
| 15500.0                        | 572.3                 | -5.2   | 40.4                 | 732.0                                  | 636.7                      | 190.3                                    | 1.000171                  |
| 16000.0                        | 561.3                 | -6.3   | 41.7                 | 720.9                                  | 635.4                      | 194.4                                    | 1.000168                  |
| 16500.0                        | 550.5                 | -7.4   | 47.2                 | 710.4                                  | 634.9                      | 193.0                                    | 1.000160                  |
| 17000.0                        | 539.8                 | -8.7   | 51.8                 | 700.0                                  | 634.3                      | 190.3                                    | 1.000164                  |
| 17500.0                        | 529.3                 | -10.0  | 45.6                 | 689.3                                  | 633.9                      | 194.3                                    | 1.000160                  |
| 18000.0                        | 518.9                 | -11.1  | 39.4                 | 678.6                                  | 633.3                      | 193.9                                    | 1.000156                  |
| 18500.0                        | 508.7                 | -12.2  | 34.7                 | 668.4                                  | 632.1                      | 197.9                                    | 1.000153                  |
| 19000.0                        | 498.7                 | -13.4  | 40.6                 | 658.3                                  | 630.6                      | 200.3                                    | 1.000151                  |
| 19500.0                        | 488.0                 | -14.6  | 46.5                 | 648.3                                  | 629.1                      | 209.3                                    | 1.000149                  |
| 20000.0                        | 479.1                 | -15.9  | 53.4                 | 638.3                                  | 628.3                      | 209.3                                    | 1.000147                  |
| 20500.0                        | 469.5                 | -17.1  | 61.2                 | 628.8                                  | 627.0                      | 214.2                                    | 1.000145                  |
| 21000.0                        | 460.1                 | -18.5  | 67.9                 | 619.1                                  | 625.9                      | 219.0                                    | 1.000143                  |
| 21500.0                        | 450.8                 | -19.7  | 67.1                 | 609.3                                  | 624.9                      | 222.4                                    | 1.000140                  |
| 22000.0                        | 441.7                 | -20.1  | 66.3                 | 599.3                                  | 623.3                      | 223.0                                    | 1.000136                  |
| 22500.0                        | 432.7                 | -20.6  | 59.0                 | 589.3                                  | 621.3                      | 220.4                                    | 1.000134                  |
| 23000.0                        | 423.9                 | -21.4  | 59.0                 | 579.3                                  | 619.3                      | 220.4                                    | 1.000132                  |
| 23500.0                        | 415.2                 | -22.1  | 59.3                 | 569.3                                  | 617.3                      |  |                           |

STATION ALTITUDE 4051.37 FEET MSL  
27 MAY 82 1400 MDT  
ASCENSION NO. 49

UN P, R, AIR DATA  
1070100049  
LC-37

GEODETIC COORDINATES  
00°40'17" LAT N  
106°51'25" LONG W

TABLE-16 cont'd

| GEOMETRIC ALTITUDE<br>MSL FEET | PRESSURE<br>MILLIBARS | TEMPERATURE<br>AIR DEGREE, CENTIGRADE | REL. HUM.<br>PERCENT | DENSITY<br>GM/CUBIC<br>METER | SPEED OF<br>SOUND<br>METERS<br>PER<br>SECOND | WIND DATA<br>DIRECTION<br>SPEED<br>GUSTS (KNOTS) | INDEX<br>OF<br>REFRACTION |
|--------------------------------|-----------------------|---------------------------------------|----------------------|------------------------------|--|--|---------------------------|
| 24000.0                        | 400.7                 | -22.9                                 | 59.4                 | 565.9                        | 310.0  |  | 1.000130                  |

STATION ALTITUDE 4051.37 FEET SL  
27 MAY 82 1400 MDT  
ASCENSION NO. 43

LAUNCHER LEVEL  
1970100045  
LC-37

GEOD. TIC COORDINATES  
32.40175 LAT N  
106.51252 LONG W

TABLE-17

| PRESSURE<br>MILLIBARS | GEOPOTENTIAL<br>FEET | TEMPERATURE                  |                        | REL. HUM.<br>PERCENT | WIND DATA                |                |
|-----------------------|----------------------|------------------------------|------------------------|----------------------|--------------------------|----------------|
|                       |                      | AIR<br>DEGREES<br>CENTIGRADE | DEWPOINT<br>CENTIGRADE |                      | DIRECTION<br>DEGREES (T) | SPEED<br>KNOTS |
| 650.0                 | 4791.                | 21.1                         | 4.2                    | 33.                  | 242.0                    | 5.9            |
| 600.0                 | 6497.                | 16.3                         | 3.5                    | 42.                  | 301.0                    | 4.8            |
| 750.0                 | 8283.                | 11.7                         | 1.1                    | 40.                  | 261.7                    | 7.4            |
| 700.0                 | 10164.               | 7.3                          | -1.1                   | 53.                  | 250.1                    | 10.0           |
| 650.0                 | 12150.               | 2.6                          | -3.3                   | 65.                  | 244.0                    | 20.4           |
| 600.0                 | 14257.               | -2.4                         | -6.2                   | 60.                  | 210.4                    | 23.5           |
| 550.0                 | 16502.               | -7.5                         | -16.2                  | 42.                  | 194.4                    | 27.1           |
| 500.0                 | 18911.               | -13.2                        | -25.7                  | 34.                  | 197.0                    | 23.5           |
| 450.0                 | 21511.               | -19.7                        | -24.1                  | 60.                  | 219.2                    | 29.0           |
| 400.0                 | 24361.               | -23.0                        | -28.9                  | 63.                  |                          |                |